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the rapid progress of astronomy in the next half-century led to a more accurate knowledge of the fundamental astronomical constants and to more refined methods in the reduction of meridian observations, and it also became evident that some of his assumptions respecting Bradley's instrument were erroneous. A new reduction was therefore highly desirable and this was undertaken by Dr. Auwers in 1866. He brought all his skill and special knowledge into play and spared no pains to insure the utmost accuracy in his work. The result of the ten years' labor it involved has been well called a "masterpiece and a model." The Auwers-Bradley catalogue at once became the starting point for all discussions of proper motions—a position it will probably hold for all time.

His fundamental system of star places, the Auwers-Bradley catalogue, and his other work in related fields, will form Auwer's most enduring monuments, but they are far from comprising the full measure of his activities. Thus, he was chairman of the German Commission for the determination of the solar parallax from the transits of Venus in 1874 and in 1882. He took the leading part in preparing the observing programs, conducted in each year one of the expeditions sent out by the government, and personally directed the elaborate discussion of all the results—a truly monumental work which fills six large quarto volumes.

From 1878 to 1912 Auwers held the position of Secretary of the Section for Mathematics and Physics in the Royal Prussian Academy of Sciences (Berlin Academy) and his tactful conduct of the manifold duties of this office, together with his unselfish and tireless devotion to the interests of the academy were gratefully acknowledged by his colleagues at the meeting of June 25, 1912, when they celebrated his jubilee—the fiftieth anniversary of his graduation as doctor of philosophy.

He founded the bureau of the "History of the Sidereal Heavens" (*Geschichte des Fixsternhimmels*) whose object it is to collect all of the meridian observations of stars since Bradley's time and to combine them into a single systematic catalogue. He was a member of the commission charged with the organi-

zation of the Astrophysical Observatory at Potsdam, and assisted in the supervision of its construction and of its management in its early years. He was also the first president of the International Association of Academies.

Auwers's commanding position in his chosen science was fully recognized in his own country and throughout the world. His own government gave him the title *Wirklicher Geheimer Ober-Regierungsrat*, and at the time of his death he was *Kanzler des Ordens pour le mérite für Wissenschaft und Künste*. For more than twenty years before his death he had been a member of the seven leading National Academies of Science in Europe and America, a distinction in which but two other astronomers of his generation shared—Newcomb and Schiaparelli. In 1888, he was awarded the gold medal of the Royal Astronomical Society of London, in 1891, the Watson gold medal of our National Academy, and in 1899, the Bruce gold medal of the Astronomical Society of the Pacific. His death marks the passing of one of whom Newcomb wrote, nearly twenty years ago, "To-day, Auwers stands at the head of German astronomy. In him is seen the highest type of the scientific investigator of our time." These sentences well express the judgment of all astronomers at the present day.

R. G. AITKEN

March 22, 1915

#### SCIENTIFIC NOTES AND NEWS

A MEETING to commemorate the life and scientific work of the late Charles Sedgwick Minot was held on March 17, in the hall of the Boston Society of Natural History. As president of the society since 1897, Dr. Minot had taken great interest in its welfare and growth, and it was due in large part to his efforts that the society has undertaken the study and exhibition of the natural history of New England as its special field. At the meeting addresses were made by Dr. Henry H. Donaldson, of the Wistar Institute of Anatomy and Biology, and Dr. Charles W. Eliot, of Cambridge. Dr. Donaldson especially dwelt upon Minot's early interest in natural history and his scientific career. Dr.

Eliot brought out particularly his great accomplishments for Harvard University in the development of teaching and research in the medical school, and emphasized the remarkable personal qualities that fitted him for this work.

THERE was printed in *SCIENCE* last week a list of the fifteen candidates selected by the council for election into the Royal Society. The *British Medical Journal* gives information in regard to their positions and work which we reproduce. The men are: Dr. F. W. Andrewes, professor of pathology in the University of London and pathologist to St. Bartholomew's Hospital; Dr. A. W. Conway, professor of mathematical physics, University College, Dublin; Mr. L. Doncaster, superintendent of the University Museum of Zoology, Cambridge, well known for his researches into the Mendelian hypothesis; Mr. J. Evershed, director of the Solar Physics Observatory, Kodaikanal, India; Dr. Walter Morley Fletcher, secretary of the Medical Research Committee established under the Insurance Act; Mr. A. G. Green, professor of tinctorial chemistry, University of Leeds; Mr. H. H. Hayden, director of the Geological Survey of India; Dr. James Mackenzie, whose researches into the action of the heart in health and disease have made his name well known to the profession; Dr. J. C. McLennan, professor of physics, University of Toronto; Dr. A. T. Masterman, fisheries inspector; Dr. G. T. Morgan, professor of chemistry in the Royal College of Science, Dublin; Dr. C. S. Myers, director of the laboratory of experimental psychology, Cambridge; Mr. G. C. Simpson, imperial meteorologist, India; Mr. A. A. Campbell Swinton, one of the early workers with the X-rays and wireless telegraphy, and Mr. A. G. Tansley, lecturer on botany, University of Cambridge.

THE dedicatory exercises of the new buildings of the Washington University Medical School will be held April 29 and 30. According to the *Journal* of the American Medical Association the exercises include, in addition to the various entertainments, addresses by the dean of the medical school, Dr. Eugene

Lindsay Opie; by Dr. William Henry Welch, Baltimore, of Johns Hopkins University; President Abbott Lawrence Lowell, of Harvard University; President Henry Smith Pritchett, of the Carnegie Foundation for the Advancement of Teaching; President George Edgar Vincent, of the University of Minnesota; Drs. William Townsend Porter, Robert James Perry, Fred Towsley Murphy and George Dock, of Washington University, Abraham Flexner, assistant secretary of the general education board, and Major-General William Crawford Gorgas, surgeon-general U. S. Army. On April 28, exercises in commemoration of Dr. William Beaumont will be held, including the presentation of the manuscripts and letters of William Beaumont to Washington University Medical School, the acceptance of the gift by the chancellor of the university, and addresses on "William Beaumont as a Practitioner," by Dr. Frank J. Lutz, and "William Beaumont as an Investigator," by Dr. Joseph Erlanger.

ACCORDING to *Nature* the Imperial Society of Naturalists of Moscow has removed the names of Professor Haeckel and Professor Ostwald from the list of members on account of their having signed the address, "To Civilized Nations."

PROFESSOR VICTOR HENSEN, the well-known physiologist of Kiel, has celebrated his eightieth birthday.

DR. JOHN R. MURLIN has been granted leave of absence from Cornell University Medical College, New York City, to accept a temporary appointment as biochemist at the Pelagra Hospital of the Public Health Service at Spartanburg, S. C.

PROFESSOR BENJ. L. MILLER, head of the department of geology of Lehigh University, has left for an extended trip through South and Central America in company with Dr. Joseph T. Singewald, Jr., associate in economic geology in Johns Hopkins University. Most of their time will be spent in the various mining districts of the countries visited, but they will make some other geologic investigations, especially in the Andes, where

they hope to study some of the highest volcanic peaks.

DR. PHILIP J. CASTLEMAN, who has held the position of assistant director of the bacteriological laboratory of the Boston Board of Health, has been appointed director of the laboratory. He succeeds Dr. James J. Scanlan, whose death occurred recently.

COOPERATIVE agreements have been effected by the Oregon Agricultural College and the Drainage Division of the United States Department of Agriculture, whereby extensive drainage operations will be carried on in Oregon during the coming year. Mr. Guy N. Hart, of the federal department, and Professor W. L. Powers, irrigation and drainage specialist of the college, expect to begin operation about April 15.

DR. ERNEST ANDERSON, professor of general and physical chemistry at the Massachusetts Agricultural College, has had under consideration the position as head of the department of science of the Margaret Morrison School of the Carnegie Institute, Pittsburgh, Pennsylvania, but has decided to remain in Massachusetts.

FRANKLIN C. GURLEY, a graduate assistant in chemistry at the Massachusetts Agricultural College, has accepted a position as chemist with the Benzol Products Company of Philadelphia.

THE third annual Faculty Research Lecture at the University of California was given by Professor Armin O. Leuschner on March 23 on "Recent Progress in the Study of Motions of Bodies of the Solar System."

THE annual meeting of the Syracuse University Chapter of the Alpha Omega Alpha Fraternity was held March 18. A banquet was served at which the guest of honor was Dr. Walter B. Cannon, of Harvard University, who delivered an address on "The Psychology of Martial Emotions."

AT a general meeting of the New York Academy of Sciences and its affiliated societies on March 22 at the American Museum of Natural History there was a social hour, with refreshments, beginning at 9:30 P.M., preceded, at 8:15 P.M., by a lecture under the auspices

of the Section of Anthropology and Psychology, entitled, "Incidence of the Effect of Moderate Doses of Alcohol on the Nervous System," by Professor Raymond Dodge, of Wesleyan University.

DR. AUGUSTUS H. GILL, professor of technical analysis at the Massachusetts Institute of Technology, addressed the Detroit Engineering Society on March 19 on "Lubricating Oils: Essentials and Characteristics."

DR. GEORGE W. CRILE repeated his lecture on "Education and War" in the Amasa Stone Memorial Chapel, Western Reserve University, on the evening of March 31. Dr. Crile consented to repeat his lecture by reason of the great numbers who were unable to gain admission at its first delivery.

MR. F. H. NEWELL, head of the United States Reclamation Service, addressed the students of the College of Engineering, University of Illinois, on March 24, on the subject of "The Engineering and Economic Results of Reclamation Work."

PROFESSOR CHAS. BASKERVILLE lectured before the Princeton Chemical Society on February 25, on "Physical Chemistry and Anesthesia."

PROFESSOR H. P. TALBOT, of the Massachusetts Institute of Technology, lectured on "The Noble Gases," on March 25, before the Phi Lambda Upsilon of Columbia University.

THE fifth annual May lecture of the Institute of Metals, London, will be given on May 12 by Sir J. J. Thomson.

A SPECIAL lecture on the septic infection of wounds was delivered before the Royal Society of Medicine, London, on March 30, by Sir Almroth Wright, who dealt with the results of his investigations and research with the expeditionary force.

A STATE biological survey, suggested by the Ohio Academy of Science, is being undertaken with a state appropriation of \$2,500, a number of the colleges of the state cooperating. The preparation of duplicate material and separate collections for the colleges and other educational institutions is the primary feature of the work.

DR. SIDNEY COUPLAND has been appointed Harveian orator of the Royal College of Physicians, London, for 1915; Dr. J. Michell Clarke Bradshaw lecturer for 1915, and Dr. Samson G. Moore Milroy lecturer for 1916.

LADY HUGGINS, widow of Sir William Huggins, the distinguished astronomer, and known for her scientific work, died at her home in London, on March 25. Lady Huggins was born in Dublin and married Sir William Huggins in 1875. She was joint author with him of many scientific papers, and of an Atlas of Representative Stellar Spectra. She was the author of a monograph on the Astrolabe; of articles in the *Encyclopædia Britannica*, and of papers in astronomical and archeological journals.

PROFESSOR NEUHAUSS, of Berlin, noted for his anthropologic investigations and his work in the field of color photography, has died at the age of fifty-nine years from diphtheria, contracted while engaged in military hospital work.

DR. CLON STÉPHANOS, director of the Anthropological Museum of the University of Athens, died on January 24, at the age of sixty years.

A CORRESPONDENT informs us that the following German zoologists have been killed in the war: Professor Stanislaus von Prowasek, head of the zoological department of the Institute for Tropic Diseases, Hamburg; Dr. W. Meyer, assistant in the same institute; Dr. W. Mulsow, assistant in the protozoological department of the Institute for Infectious Diseases, Berlin; Dr. G. Kantsch, docent for zoology, Kiel; Dr. v. Steudell, Edinger Institut, Frankfurt; Dr. v. Müller, assistant in the Zoological Institute, Kiel; Dr. v. Greinz, assistant in the Zoological Institute, Königsberg. The following have been wounded, but have in some cases recovered: Professor O. zur Strassen, professor of zoology, Frankfurt; Professor L. Rhumbler, professor of zoology, Forest School, Minden; Dr. W. Reichensperger, docent for zoology, Bonn; Dr. C. Thienemann, docent in Münster.

THE American Ethnological Society has addressed the following reply to the French universities, which have addressed the scientific

bodies of neutral countries, setting forth their view of the causes of the war:

The American Ethnological Society acknowledges the receipt of the communication of the French universities to the universities of the neutral countries, dated November 3, 1914, and takes the opportunity to express its sincere sympathy for the sufferings that the present war is inflicting upon France and other European countries.

The society appreciates and respects the sentiments that have dictated the statement transmitted to it, but believes, regardless of the feelings of the individual members, that it behooves it to listen with the same respect that it gladly grants to you to the statements emanating from other nations. The society, being located in a neutral country, does not share the passions engendered by the patriotic feelings of the citizens of all the contending nations. It is conscious, however, that if the United States of America should find themselves involved in a similar struggle, our members might feel the same intense desire to convince the world of the righteousness of their cause as impels at present French, German and British scholars.

At present, on account of the remoteness from warlike passions, the society is mindful that the time will come (and we devoutly hope it may come soon) when the universities and scientists of the whole world may work together again for the true ideals of mankind, that know no national boundaries, when respect for the individuality of each nation may again take the place of harsh recrimination, when the true spirit of cooperation that has characterized scientific work of the past century may reappear. When that moment arrives, the passionate expressions of an excited time will not and must not stand in the way of mutual understanding and of a renewal of old friendships.

THE council of the Society of American Bacteriologists has decided to hold a special summer meeting in San Francisco, August 3, 4 and 5, 1915. The chairman of the local committee of arrangements is Dr. Wilfred H. Manwaring, Stanford University, California.

THE Princeton University Observatory has received from Mr. Archibald D. Russell, of New York, a gift of the sum necessary for the carrying on for five years of its share of the work described in Professor Pickering's summary of the present needs of astronomical research (*SCIENCE*, January 15, 1915).

THROUGH the efforts of Dr. Ralph Arnold, and other alumni of the department of geol-

ogy and mining, Stanford University has just added to its collections the working library and material of the late Professor Henry Hemphill, of Los Angeles. The collection contains between 8,000 and 9,000 specimens of shells and 150 volumes. The material is of very great importance in the study of the Tertiary geology of the Pacific coast, and especially of the geology of the petroleum deposits of California.

THE trustees of the Presbyterian Hospital, New York City, have taken an option to purchase the former American League baseball grounds, bounded by Broadway, Fort Washington avenue, 165th and 168th Streets. This site is owned by the New York Institute for the Education of the Blind, which has been holding it in the market at \$2,000,000. Purchase of the site is made possible by the bequests of the late John S. Kennedy, by whose will the hospital receives about \$2,500,000. It is understood that the College of Physicians and Surgeons, the medical school of Columbia University would be removed to the new site. Mr. Edward S. Harkness gave, in 1910, \$1,500,000 toward an alliance between the hospital and the university.

#### UNIVERSITY AND EDUCATIONAL NEWS

By the will of General Brayton Ives, of New York City, the largest part of his estate is bequeathed to Yale University for its general purposes. The daily papers estimate the value of the bequest at from \$750,000 to \$1,500,000.

MR. W. E. ALLEN, of Sheffield, has bequeathed about \$750,000 to public purposes, including \$25,000 and part of the residuary estate to the University of Sheffield for work in applied science.

ACCORDING to private information received from Mexico, the Carranza government has closed all educational and scientific institutions in Mexico, including not only the University, the Geological Institute, the Medical Institute and the National Museum, but also all normal schools, high schools and elementary schools under its control.

THE department of chemistry at Iowa State College, Ames, Iowa, is now installed in the

new chemistry building which replaces the one destroyed by fire in March, 1913. The building is constructed entirely of brick, stone and concrete and is as near fireproof as possible. The initial cost was \$200,000, and the building is 244 feet by 162 feet; three stories high, with a usable basement.

THREE Whiting fellowships in physics, each with an income of \$600, for the college year 1915-16, have been filled at the University of California. Fellowships on this endowment fund are conferred for the purpose of furthering advanced study, either abroad or at an American university.

STUDENTS in the newly established forestry school at the University of California are to receive instruction in game conservation. They will be taught to recognize at sight the different species of game fish and animals and will be informed as to the economic value of each and the means by which they can be conserved. Dr. H. C. Bryant, in charge of the bureau of education, publicity and research recently established by the California Fish and Game Commission, will give the introductory lectures. He will be followed by N. B. Scofield, in charge of the department of commercial fisheries, and Dr. W. P. Taylor, curator of mammals in the University of California Museum of Vertebrate Zoology.

DR. ANDREW HUNTER, of the Cornell Medical School, has been appointed professor of pathological chemistry in the University of Toronto.

DR. R. TRAVERS SMITH has been appointed to the chair of materia medica, therapeutics and pharmacology in the school of surgery of the Royal College of Surgeons in Ireland.

#### DISCUSSION AND CORRESPONDENCE

##### EVIDENCE BEARING ON THE ORIGIN OF HUMAN TWINS FROM A SINGLE OVUM

ON the supposition that twins originate always from two ova, and that the chances are even as to whether an individual of a pair of twins is to be male or female, the ratio of like pairs to those whose members are of different sex may be worked out according to the laws of chance. The Mendelian ratio